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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,202	10/01/2003	David M. Mills	132147-2	7118

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

JAWORSKI, FRANCIS J

ART UNIT PAPER NUMBER

3737

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/676,202

Applicant(s)

MILLS ET AL

Examiner

Jaworski Francis J.

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 21, 39-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 39-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

Claims 1 – 21 and 39-41 are present for examination in this case pursuant to the election without traverse filed on 10-31-2005.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention since 'said lens' lacks antecedence.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ustuner et al (US6749570), or Hanafy (US6258034) insofar as Ustuner et al teaches a

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curved necessarily elevationally focused two-dimensional cMUT array col. 2 lines 52 – 64 and cols. 3-4 bridging.

Claims 1-4, 9, 11 – 12, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanafy insofar as Hanafy col. 3 lines 28-36 and col. 10 lines 4-9 teaches that a one dimensional cMUT array may also be elevationally focused by virtue of an elevational impedance gradient in-built into the backing layer. since the patent teaches both an adherent polymeric silicone rubber lens col. 4 top and adhesive layer bonding col. 4 lines 33 – 44 including a lens-array bond if no matching layer is used, or an impedance layer(s) therebetween which with adhesive would serve as a barrier layer.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6 – 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over either of the above references (in the case of claim 6) or Hanafy (claims 6, 7, 8), in either case further in view of Friemel et al (US6537220) insofar as whereas the former are silent as to hard-wiring of cMUT groupings, it would have been obvious in view of the latter to do so since interconnection groupings 110, 120 were known to facilitate full 2D cylindrical lens focusing in that example, Hanafy otherwise showing in Figs. 1a-1b that such an array may be elevationally curved.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ustuner et al as applied to claim 5 above, and further in view of Hanafy, since whereas the former does not discuss adhesion, it would have been obvious in view of the latter to adhere the various array layers conventionally associated with arrays since otherwise they would delaminate under contact forces.

Claims 13 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy as applied to claim 9 above, and further in view of Eaton et al (US5876345) col. 6 top since whereas the former does not mention silicate bonding it would have been obvious to entertain organometallics or silicates for such since they are materials which are compatible in their impedance values for transitioning to tissue forward of the array.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy as applied to claim 9 above, and further in view of Snow et al (US6749554) since whereas the former is silent as to organosilane use, it would have been obvious in view

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of the latter col. 14 lines 20 – 23 to coat metal portions for adhesion using organosilanes since they were known to be compatible with silicates such as are used in adhering transducer array layers.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy or Ustuner et al as applied to claim 1 above, and further in view of Robinson (US6659954) since whereas the former are silent as to pMUT use, it would have been obvious in view of the latter col. 2 lines 1 – 10 to use such in the arrays of the former since they were known equivalents for such fabrications.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ustuner et al or Hanafy as applied to claim 1 above, and further in view of Barnes et al (US6676602) insofar as whereas the former are silent as to CMOS fabrication into the silicon substrate of the cMUTs, it would have been obvious in view of the latter to perform such, see col. 4 lines 54 – 67 and col. 8 line 66 – col. 9 line 37 in association with Fig. 6, since this was known to be suitable to form the microswitch interconnects for 2-D arrays formed from cMUTs for elevational focusing by curvature or lens adherence, see col. 12 lines 27 – 34.

Claims 19 –20 are rejected under 35 U.S.C. 103(a) as being unpatentable over as Hanafy in view of Barnes et al applied to claim 18 above, and further in view of Finsterwald et al since whereas the former teach fabrication of a curved cMUT array facing towards a focal line, it would have been obvious in view of the latter Fig. 2a,2b to provide a constant curvature profile in order to make uniform the focusing effect along the elevation.

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Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy in view of Barnes et al as applied to claim 19 above, and further in view of Robinson et al as the latter was applied against claim 17 supra.


Claims 39 – 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy in view of Barnes et al as applied to claims above regarding cMUT array constructs, and further in view of Friemel as the latter was discussed in relation to claims 6 – 8 above.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy in view of Barnes et al and Friemel et al as applied to claim 39 above, and further in view of Robinson as the latter was argued against claim 21 above.

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 571-272-4738.

FJJ:fjj

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Francis J. Jaworski  
Primary Examiner